USER INTERFACE SYSTEM AND METHOD

CROSS-REFERENCE TO RELATED APPLICATION

[0001] This application is based on and claims priority from Korean Patent Application No. 10-2006-0000216 filed on Jan. 2, 2006, in the Korean Intellectual Property Office, the disclosure of which is incorporated herein in its entirety by reference.

BACKGROUND OF THE INVENTION

[0002] 1. Field of the Invention

[0003] The present invention relates to user interface, and more particularly, to a user interface system and method for generating a vibration signal that can be easily recognized by a user based on motion information of a graphic object and information on a surface of another graphic object existing on a graphic screen when the user operates the object on the graphic screen using a user interface device and transmitting the vibration signal to the user interface device, thereby increasing an operation feeling with respect to the user interface device.

[0004] 2. Description of the Related Art

[0005] With the development of technology, various types of user interface devices have been developed to operate a graphic object displayed on a two- or three-dimensional graphic screen. A vibration motor is an example of a user interface device.

[0006] In conventional technology, just attribute information (e.g., surface information such as a rough surface, a smooth surface, or a soft surface) regarding a graphic object displayed on a graphic screen is transferred to a user through a user interface device, but attributes of another graphic object are not provided to a user as tactual information considering the motion of the graphic object directly operated by the user.

[0007] For example, a feeling of bumping into a thing having a certain stiffness at a speed of 1 m/sec is different from a feeling of bumping into a thing having the same stiffness at a speed of 10 m/sec. Accordingly, a method of generating a vibration signal based on motion information of a graphic object operated by a user on a graphic screen and information on another object existing on the graphic screen and transmitting the vibration signal to the user is desired.

SUMMARY OF THE INVENTION

[0008] Additional aspects and/or advantages of the invention will be set forth in part in the description which follows and, in part, will be apparent from the description, or may be learned by practice of the invention.

[0009] The present invention provides a method and system for generating a vibration signal that can be easily recognized by a user based on motion information of a graphic object operated by the user on a graphic screen and information on a surface of another graphic object.

[0010] The present invention also provides a method and system for transmitting the vibration signal to the user through a user interface device.

[0011] These and other objects of the present invention will be described in or be apparent from the following description of the preferred embodiments.

[0012] According to an aspect of the present invention, there is provided a user interface system including a storage module storing a plurality of graphic objects and attribute information of each of the graphic objects, a control module receiving motion information of an interface object representing a user among the plurality of graphic objects from an interface device and providing frequency information and amplitude information based on the motion information and the attribute information, and a drive module generating a vibration signal based on the frequency information and the amplitude information and transmitting the vibration signal to the interface device.

[0013] According to another aspect of the present invention, there is provided a user interface method including receiving motion information of an interface object representing a user among a plurality of graphic objects from an interface device, providing frequency information and amplitude information based on the motion information and attribute information of each of the graphic, generating a vibration signal based on the frequency information and the amplitude information, and transmitting the vibration signal to the interface device.

[0014] According to another aspect of the present invention, there is provided a user interface method including receiving motion information of an interface object moved by a user among a plurality of graphic objects from an interface device, providing frequency information and amplitude information based on the motion information and attribute information of each of the graphic, generating a vibration signal based on the frequency information and the amplitude information, and transmitting the vibration signal to the interface device.

[0015] According to still another aspect of the present invention, there is provided a user interface system including a display screen displaying a plurality of graphic objects and an interface object representing a user among the plurality of graphic objects, and an input unit for operating a moving speed of the interface object, wherein vibration is transmitted to the input unit according to the moving speed and surface information of a graphic object interacting with the interface object.

BRIEF DESCRIPTION OF THE DRAWINGS

[0016] The above and/or other features and advantages of the present invention will become more apparent by describing in detail embodiments thereof with reference to the attached drawings in which:

[0017] FIG. **1** is a block diagram of a user interface system according to an embodiment of the present invention;

[0018] FIG. **2** is a block diagram of a control module included in a host device, according to an embodiment of the present invention;

[0019] FIG. **3** is a block diagram of a drive module included in a host device, according to an embodiment of the present invention;

[0020] FIG. **4** is a flowchart of a user interface method according to an embodiment of the present invention;

[0021] FIG. **5** illustrates a game device according to an embodiment of the present invention;

[0022] FIG. **6** is a block diagram illustrating the structure of a game device according to an embodiment of the present invention;

[0023] FIG. **7** illustrates the amplitude of tactual information in an embodiment of the present invention;

[0024] FIG. **8** illustrates a virtual block according to an embodiment of the present invention;